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## United States Department of Agriculture,

## SECTION OF SEED AND PLANT INTRODUCTION.

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## THE CULTIVATION OF ZNAIM CUCUMBERS.

Znaim is a thriving Austrian town about one hour's ride by rail north of Vienna. The place is known all over Austria and Germany through the enormous quantities of cucumber pickles which it exports. Several thousand citizens find in the culture of the so-called "Znaim" cucumber one of their principal occupations. In a single season cucumbers to the value of \$480,000 have been sold from the place.

This culture is an illustration, of which there are many in these old European countries, of the gradual development of certain special crops and the building up of small paying industries, such as it is the aim of the Section of Seed and Plant Introduction to foster. The writer was unable to visit Znaim, but the following facts, taken from a small brochure by Dr. I. Zawodny,<sup>1</sup> may be relied on:

The Znaim cucumber is a variety of *Cucumis sativus* and belongs to the field-cucumber class. The seeds of this variety were brought to Znaim by a certain Andreas Lutz, servant of one of the Moravian princes. They are reported to have been introduced over one hundred years ago, and to have come from the south (or Orient). The seeds were distributed throughout the county of Znaim, and from that early date the culture of this cucumber has been a lucrative one.

The statistics show that, while in 1885 only 910 acres were devoted to cucumbers in the neighborhood of Znaim, in 1895 there were fully 2,000 acres of the vegetable. The yield in 1885 was more than 150,000,000 cucumbers, while in 1895 it reached the maximum production of over 336,000,000. In the last ten years the acreage has more than doubled. The average annual yield per acre has been about 165,000 cucumbers.

The cucumber, as is well known, does best in a deep, loose soil. The plants are cultivated in sunny locations in rich, well-worked soil which has been abundantly manured. The ground chosen for the cucumber beds is plowed in the autumn, and the following

<sup>1</sup>Zawodny, Dr. I., *Die Znaimer Gurke: Eine Studie, mit 6 Illustrationen*: Wien, 1897. H. Hitschmann. (Carl Gerold's Sohn.) Pp. 32.



spring worked over with a spade or again plowed. Later in the spring well-rotted manure, compost, and especially horn shavings, are worked into the soil, and before planting the ground is harrowed. Early in May circular holes, 15 to 24 inches in diameter and 9 to 15 inches deep, are dug 5 to 6 feet apart each way. A part of the soil removed is mixed with stable manure, and the holes are two-thirds filled with this mixture. The remaining soil is then shoveled in and rounded up in the form of a low mound. Fifteen to thirty cucumber seeds are planted around the border of this mound, covered with sifted soil, which is packed down about them. These mounds are at first covered at night with inverted pots. Four to six quarts of seed are required to plant an acre. As a considerable percentage of cucumber seed is often poor, it is tested before sowing by floating it in water, those which do not sink being discarded. Many growers germinate the seeds before planting them. When there are cool nights and dry, hot days during the planting season, many seedlings die and must be replaced by fresh ones. Pot-grown seedlings are very seldom used in Znaim, but young plants dug from hills in which too many seeds have germinated are transplanted to fill the gaps. In Znaim, onions or cabbages are grown between the mounds as a secondary crop.

As soon as the young plants have made their third leaf they are carefully hilled up to the seed leaves. The hills are cultivated from one to three times. The fruits begin to form in the first half of July. However, fruiting is sometimes delayed in unfavorable years until the last of July. Should the plants show a tendency to form too many runners, the weaker are pruned and the remaining ones soon spread out advantageously over the ground.

The picking season lasts from July to the end of September. Tuesdays and Fridays are generally the picking days. On these days the market of Znaim is flooded with cucumbers. They are graded according to size by the farmers into "large salad," "medium," and "small," and are packed in baskets or sacks, or may even be offered by the wagon load.

The costs of culture and the profits from a cucumber field vary according to soil, location, and methods of handling; hence, only an approximate estimate can be given:

### *Costs and profits of cucumber culture.*

[From estimates of Josef Roth, of the Agricultural School of Znaim.]

Cost of culture per hectare (nearly  $2\frac{1}{2}$  acres)—

Interest at 4 per cent on \$500 (value of hectare of good cucumber land) .....	\$20.00
Plowing and harrowing twice .....	5.75
Manure (15 wagon loads) and hauling to the field .....	28.90
Digging holes and planting seeds (30 days at 34 cents per day) .....	10.20

*Costs and profits of cucumber culture.*—Continued.

Cost of culture per hectare (nearly 2½ acres)—*Continued*—

Seed, 12 quarts at 96 cents per quart .....	\$11.52
Cultivation, weeding, etc., 100 days at 34 cents per day .....	34.00
Picking, 150 days at 34 cents per day .....	51.00
Cleaning and sorting, 30 days at 34 cents a day .....	10.20
Transport of cucumbers to market, 20 half days at 72 cents per half day .....	14.40
Miscellaneous expenses .....	7.25
Insurance against hail, \$385 per hectare at 4½ per cent, and extras ..	19.30

Total costs .....	212.52
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Returns from one hectare of cucumbers—

Large cucumbers, 4,200 at \$4 per 100 .....	\$168.00
Medium-sized cucumbers, 90,000 at \$1.20 per 1,000 .....	108.00
Small-sized cucumbers, 180,000 at \$6.43 per 10,000 .....	115.74

Gross returns .....	391.74
Cost of production .....	212.52

Net profit on one hectare .....	179.22
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According to these figures the total cost per acre would be about \$85.30 and the profits \$72.74. However, as farm laborers are paid in Znaim only 34 cents per day, these figures give only a very general idea of the probable cost and profits of a similar culture in America. In general, this ratio would probably hold good. The amount of work in this culture which can be done by children is very considerable, and it is in many respects unusually well adapted to a thickly populated region in the neighborhood of a large market.

The marketing of the Znaim cucumbers is regulated by special rules, and fines are imposed, not only to prevent the sale of cucumbers from other localities under the name of "Znaim," but also to control such petty speculation as the varying prices of the crop would induce. It is difficult to determine in how far the soil and cultural conditions influence the quality of this Znaim cucumber. Its uniformly high grade and excellent flavor are sufficient reasons for its being sold in all parts of Austro-Hungary, Germany, Roumania, Servia, Bulgaria, Greece, Italy, France, Luxemburg, Belgium, England, Russia, Africa, and even America and Australia.

The cucumbers are prepared for export in various ways—they are salted (Salz gurken), spiced (Gewurz gurken), preserved in sugar (Zucker gurken), or flavored with mustard (Senf gurken). The salted cucumbers and those prepared with spices form the bulk of the export, being shipped in casks of different sizes, or in five-quart glass jars packed in cases. Although formerly Austro-Hungary and the Balkan States imported most of their cucumbers from Germany, Belgium, Italy, and France, since the development of the Znaim culture and the introduction of modern packing methods, this



small county not only fills the home demand for cucumbers, but exports in large quantities to all parts of the world.

A variety of cucumber which has gained such an enviable reputation as the Znaim, should be worthy of trial by the pickle-cucumber growers of America, and the small quantity of seed<sup>1</sup> imported ought to be given a thorough test in comparison with our own varieties.

DAVID G. FAIRCHILD,  
*Agricultural Explorer.*

Approved:

JAMES WILSON,  
*Secretary of Agriculture.*

WASHINGTON, D. C., *January 10, 1901.*

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<sup>1</sup>The sale of seed from Znaim is jealously guarded against. The amount sent was all that the owner could be induced to part with. The seed secured has been distributed to State experiment stations for testing purposes.